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# WHAT KIND OF WATER DO YOU DRINK?

A radio talk by J. W. Sale, Food, Drug, and Insecticide Administration, through WRC and 34 other radio stations associated with the National Broadcasting Company, at 1:15 p.m., E.S.T., Wednesday, March 26, 1930.

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I'm not going to talk to you today about the bottled waters which some of you may use on your tables, but about the common, ordinary supply of drinking water from well or faucet or spring. Of course the Food, and Drug Administration, which enforces the Federal Food and Drug Act, watches over the purity and correct labeling of your bottled table water.

I don't need to labor the point of the importance of a good water supply to the farm or the city family. The greatest tragedy the poet could imagine was:

"Water, water, everywhere  
Nor any drop to drink."

So, I simply ask you to give heed, before the heavy water-drinking season starts, to this question "What kind of water does our family drink?"

Well, the answer doesn't depend at all upon the chemically pure water-- the  $H_2O$  -- in your family supply. It depends upon the kinds and quantities of things other than water contained in the water.

There may be organic matter in your water supply; there may be, almost undoubtedly is, inorganic matter in it. The organic matter may include bacteria of both harmless and harmful types, extractions of soil and sewage, or their decomposition products, I'll have more to say later about removing harmful organic matter from your drinking water supply.

The inorganic matter in your water supply will include mineral salts of various kinds--- perhaps common salt; perhaps Glauber's or Epsom salts, perhaps dissolved limestone. Some of these salts make water "hard." They give different waters their characteristic flavors.

Water may be temporarily or permanently "hard." That is to say, the hardness may be removed by boiling. That is temporary hardness. Permanent hardness cannot be removed by boiling. Now it is possible, by the use of chemicals, to reduce either temporary or permanent hardness of water. However, I should not advise any inexperienced person to attempt to remove hardness from drinking water by the use of chemicals. If you want to procure a soft-water supply for all household uses, and are prepared to make a considerable outlay for the purpose, you had better buy water-softening apparatus. The names of manufacturers of such apparatus can be obtained from a trade directory. I may say that the heavy expense of installation

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usually makes it impracticable to put water-softening apparatus in the farm home. You can soften water to be used only for cleansing purposes by the use of ammonia or borax.

Aside from "hardness," inorganic materials, sometimes cause water to be cloudy or turbid, and thus to be unsuited for drinking. This is especially true of water from newly dug wells. Usually, however, the water from such wells, will become clear after a few months. Nearly always the turbidity is due to finely divided clay or sand that persists in staying in suspension. Remember this caution about turbid water; if it becomes cloudy and turbid after rains, it is quite likely to be polluted and potentially dangerous to health. The usual method of removing turbidity is filtering the water through sand and gravel. You can buy water filters on the market or you can build them at home from concrete by following the directions in Farmers' Bulletin 1448.

So much for hardness and turbidity of drinking water. Now we come to odors of drinking water, and to learn how to deal with them, we have to go back and pick up our classification of what affects the quality of drinking water. Hardness and turbidity are caused by inorganic matter. But odors sometimes are due to organic matter -- to various types of microscopic organisms; then again, odors may be caused by inorganic matter, to hydrogen sulfide gas, or to earth or clay.

Now it is not generally believed that organisms which cause odors in water are injurious to health, nor is it thought that the chemical substances causing odors harm health. But water containing odor-creating organisms is objectionable from the esthetic standpoint, and it is possible that their presence in large numbers may cause temporary intestinal disorders. Bad odors may be caused by sewage or other pollution, in which case the water may be highly dangerous to health. Frequently filtration through sand or charcoal or both will remove or greatly reduce objectionable odors. This treatment, however, cannot be depended upon to remove all disease-producing organisms.

There is no way of proving that a water is polluted with disease-producing organisms other than by laboratory analysis or by showing that a particular water supply is the direct cause of illness. Bad odor or taste, a cloudy or turbid appearance of the water after rains, and the development of intestinal disorders after drinking it sometimes indicate a polluted water supply. On the other hand, bad odor is often due to causes other than pollution, and a sparkling clear water may convey disease. Suspected water should always be analyzed as soon as possible and suitable remedial measures taken if pollution is proved. The United States Department of Agriculture can not analyze water for individuals, and many States are subject to similar restrictions. Specific inquiries regarding pollution of water, analyses, etc., can best be answered by State health officials, who are familiar with local conditions. Do not drink water believed to be polluted unless there is no other water available, in which case heat the water until it boils vigorously, or disinfect it by the addition of a minute quantity of some suitable chemical. It is not possible to indicate the exact amount of chemical which will just sterilize a particular water without introducing an excess of the chemical since waters of varying composition react differently toward the added chemical. Usually, clear water is more readily disinfected than turbid or muddy water. However, clear and sparkling waters may contain



relatively large quantities of oxidizable substances such as ferrous iron, and the harmful bacteria contained in them may not be killed by ordinary doses of the disinfectant. In order to disinfect drinking water without introducing an excess of chemical, a laboratory test should be made. As this is frequently impracticable when an emergency exists, I will give you directions for the addition of a chemical to water suspected to be polluted, which will in most instances render it safe to drink. The chemical which I am going to ask you to remember is one that is contained or should be contained in every medicine cabinet. It is tincture of iodine, I-O-D-I-N-E. If you do not have a bottle of tincture of iodine in your medicine cabinet you can purchase it at small cost any drug store. The tincture contains approximately 7% of iodine. Now listen carefully to the directions for the addition of the tincture to polluted water. They are as follows: Mix 1 drop of the tincture thoroughly with 1 quart of water. The water so treated will usually be safe for drinking purposes after 30 minutes have elapsed. Proportional mixtures for other quantities of water are as follows: 11 drops of tincture in 2-3/4 gallons of water (an ordinary pail full), 1 tablespoonful or 3 teaspoonfuls of tincture in 52 gallons of water (a large barrel, approximate inside middle diameter 24 inches, and diameters 20 inches, depth 30-3/4 inches).

Another method of disinfecting water is by means of tablets containing a compound of chlorine. Such tablets together with directions for use can be obtained at many drug stores.

If your home water supply is beyond suspicion, the directions which I have just given will come in handy when you take that long automobile trip this summer. You will find it a simple matter to mix the requisite quantity of tincture of iodine to the water in your vacuum bottle, and by taking this simple precaution avoid the sick spell which not infrequently results from drinking polluted water.

There is one more thing I shall ask you to remember. You will find a lot of interesting information about water supplies and water treatment in two publications that we shall be glad to send you on request without cost to you. They are Farmers' Bulletin 1448 called "Farmstead Water Supply" and Yearbook Separate 1040 called "Water Supply of Rural Communities Frequently Requires Purification." Just ask for them by number: Farmers' Bulletin 1448 and Yearbook Separate 1040 and address your request to the U. S. Department of Agriculture, Washington, D. C., or to the station to which you are listening.

Thank you, Good afternoon.

